Flood Resistant Home Project

Design Brief- Category year 7- 9 - 'Design a home that can resist flooding.'

- <u>Things to research.</u>
- Existing flood resistant homes
- Floating one
- Stilts or ones that can retract and extend.
- Flexible pipes/other pipes and electrical wires
- Density and how things float
- Upside down table with house on legs
- News –Valencia-flood
- Folded stilts with pipes inside

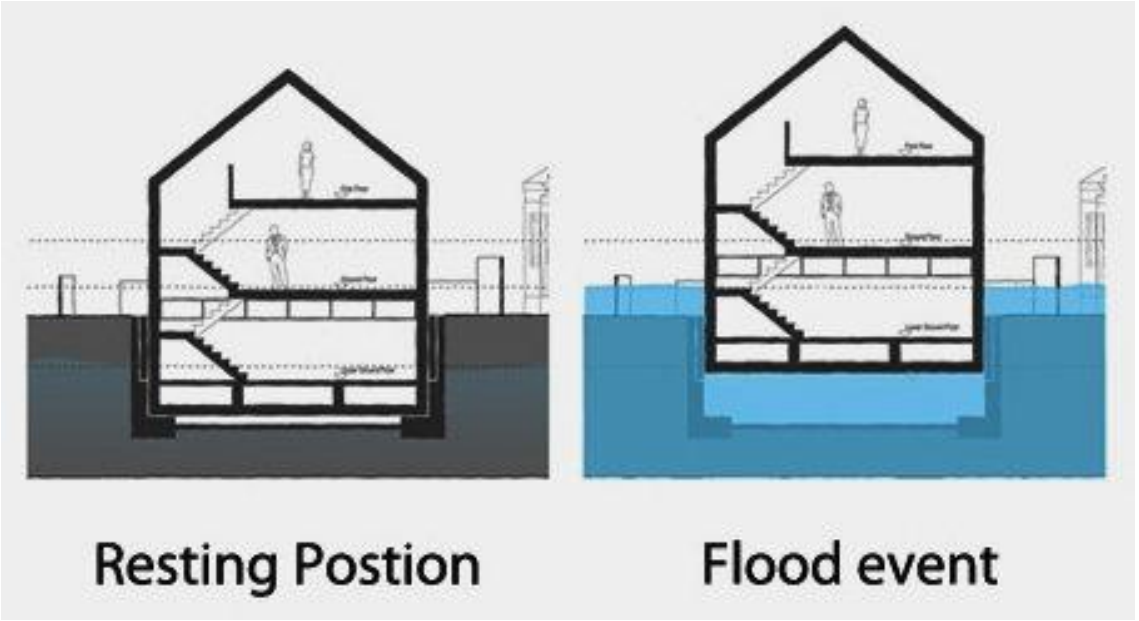
Ideas

Stilts that can retract and retract-run plumbing through stilts water sensor

Big drainage system that runs through the walls and floor of the house and as it enters through loads of pipes it gets warmed and warms up your hose and, in the summer, it does the opposite

Connection to base:

- Timber frame
- Large surface area on the bottom
- Contained within a structure
- Stilts/chains



Density Experiment

The aim of this was to see what materials could be used for the house to be able to float and to find out what density the house would have to have.

Material	Dimensions (cm)	Weight (g)	Density
Stone	10*10*1.9	110	3
wood	5*2.9*3.9	41.66	0.7
Zinc/Iron	5*24.5	576.9	12.82

Results:

Density= Mass/Volume

The whole House must have a Density of below 1 so it is less dense than water and so it floats.

Conclusion:

Wood and Wax were the only 2 things we tested that floated.

Zinc/iron didn't float as we expected because they have a density higher than one.

0 ml

Beaker experiment showing how it floats when it's density is less than 1

20 ml

40 ml

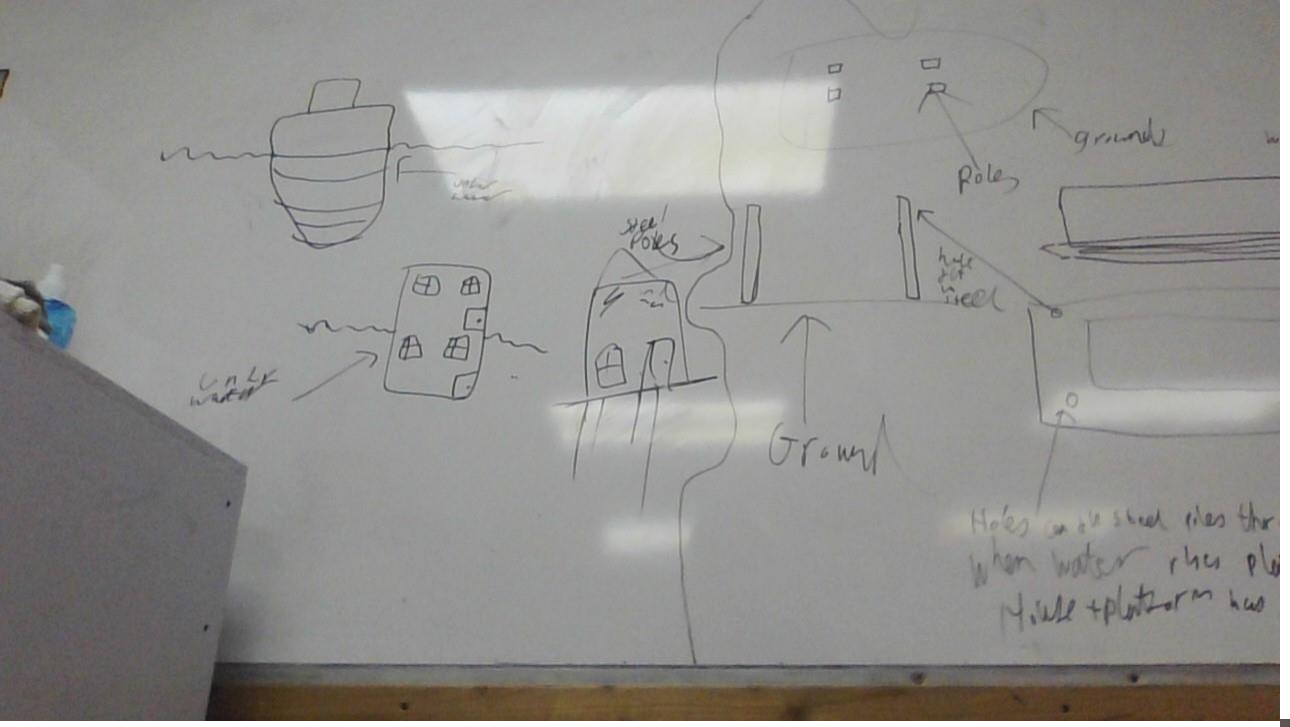
60 ml

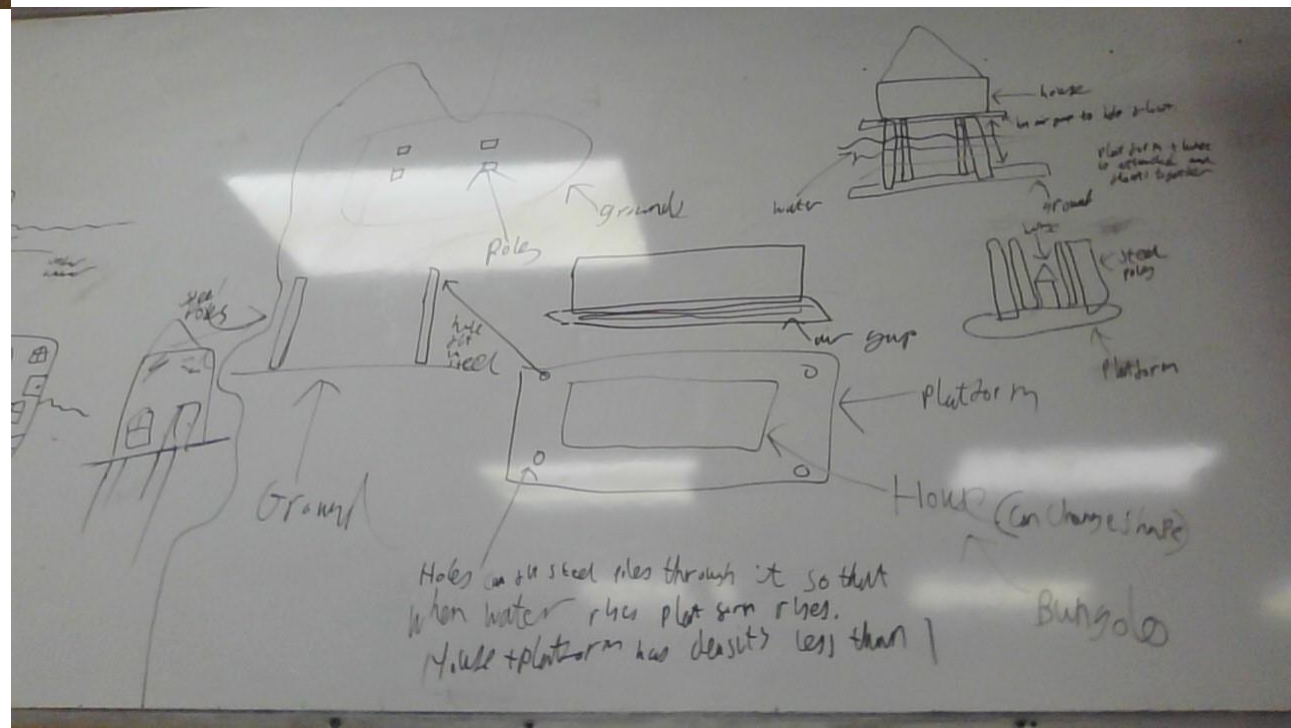
80ml

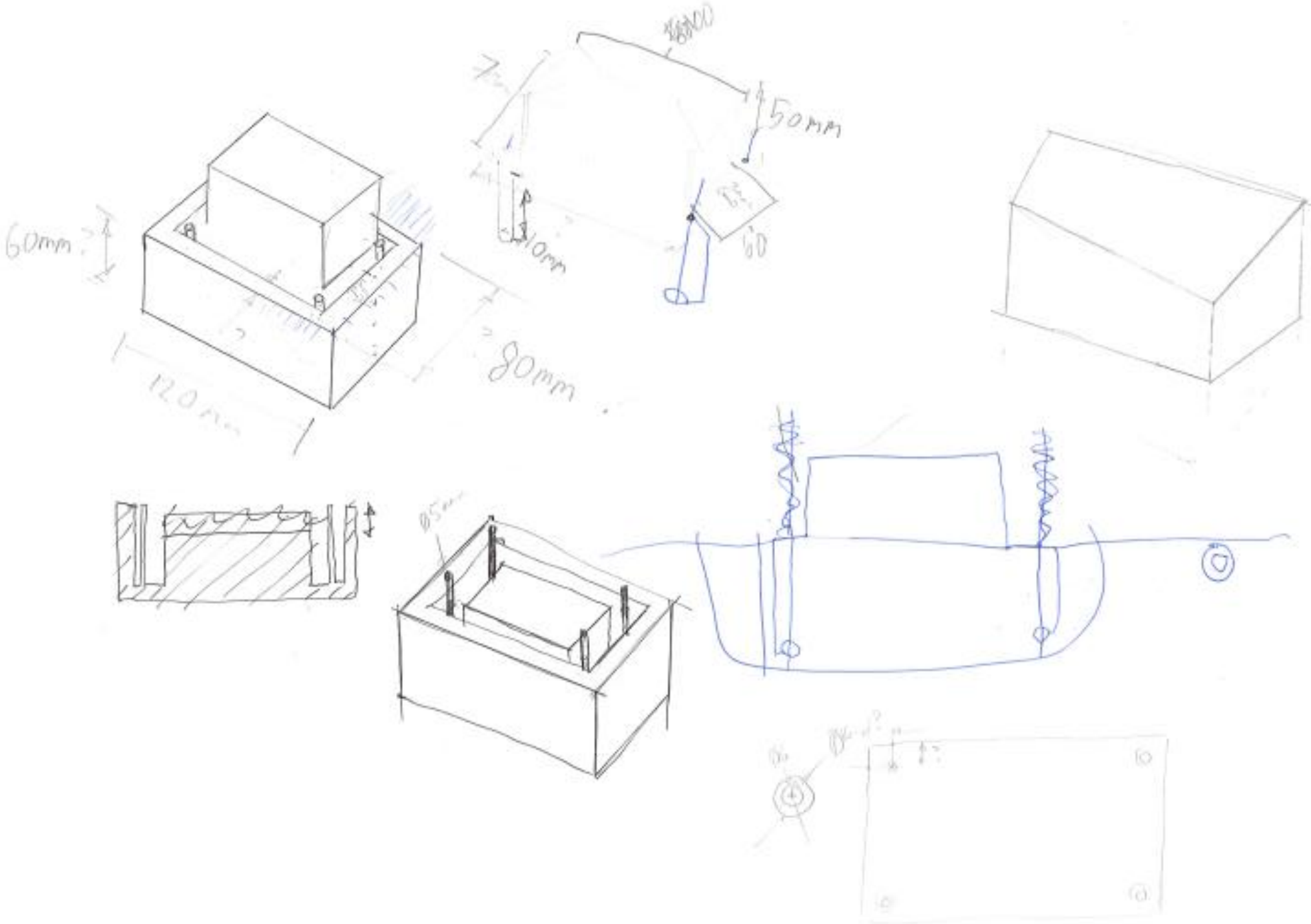
100 ml

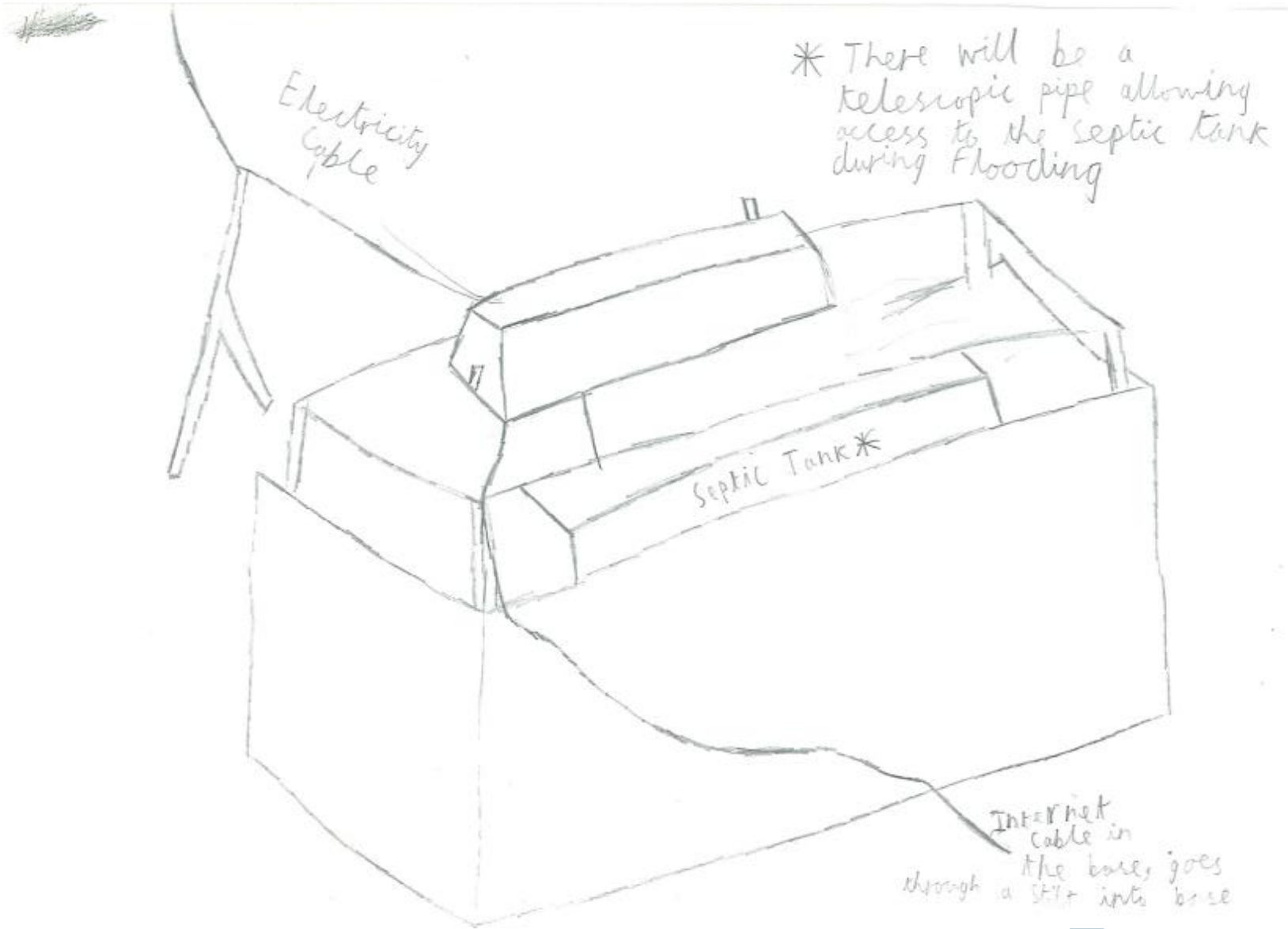
Experiment

Mores Ideas and Brainstorming.

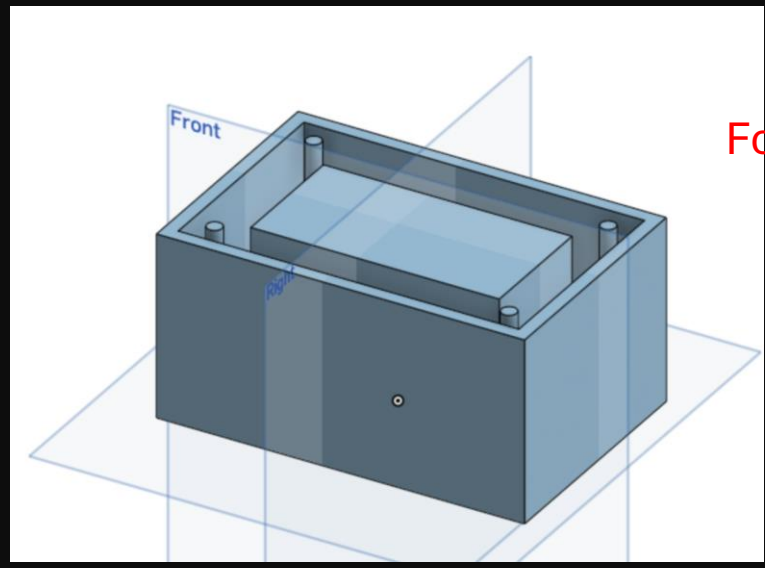





60mm
120mm
80mm
50mm

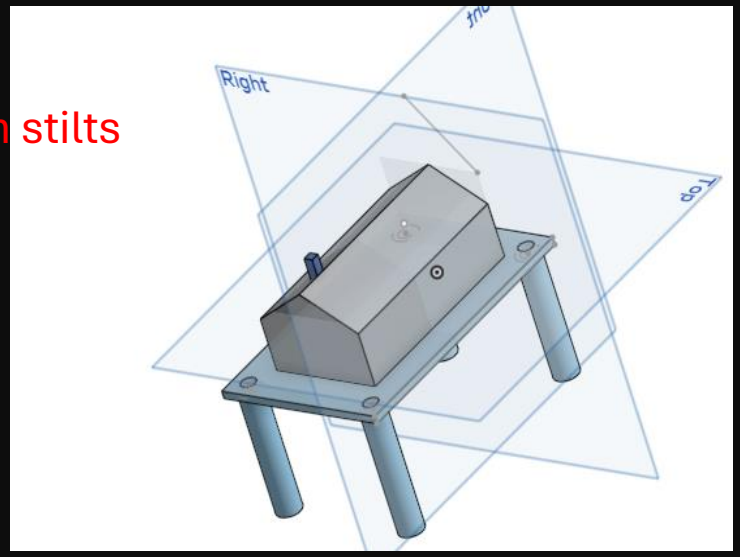

* There will be a telescopic pipe allowing access to the septic tank during flooding
Electricity Cable
Septic Tank*
Internet Cable in the base, goes through a slit into base

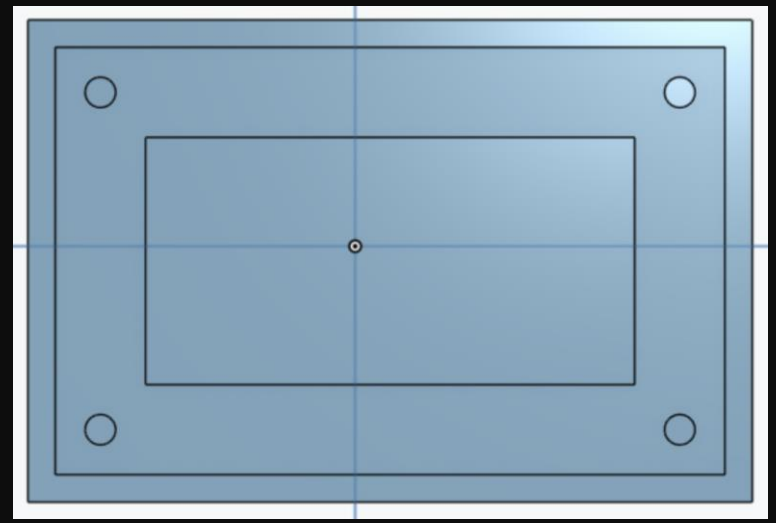
Onshape designs



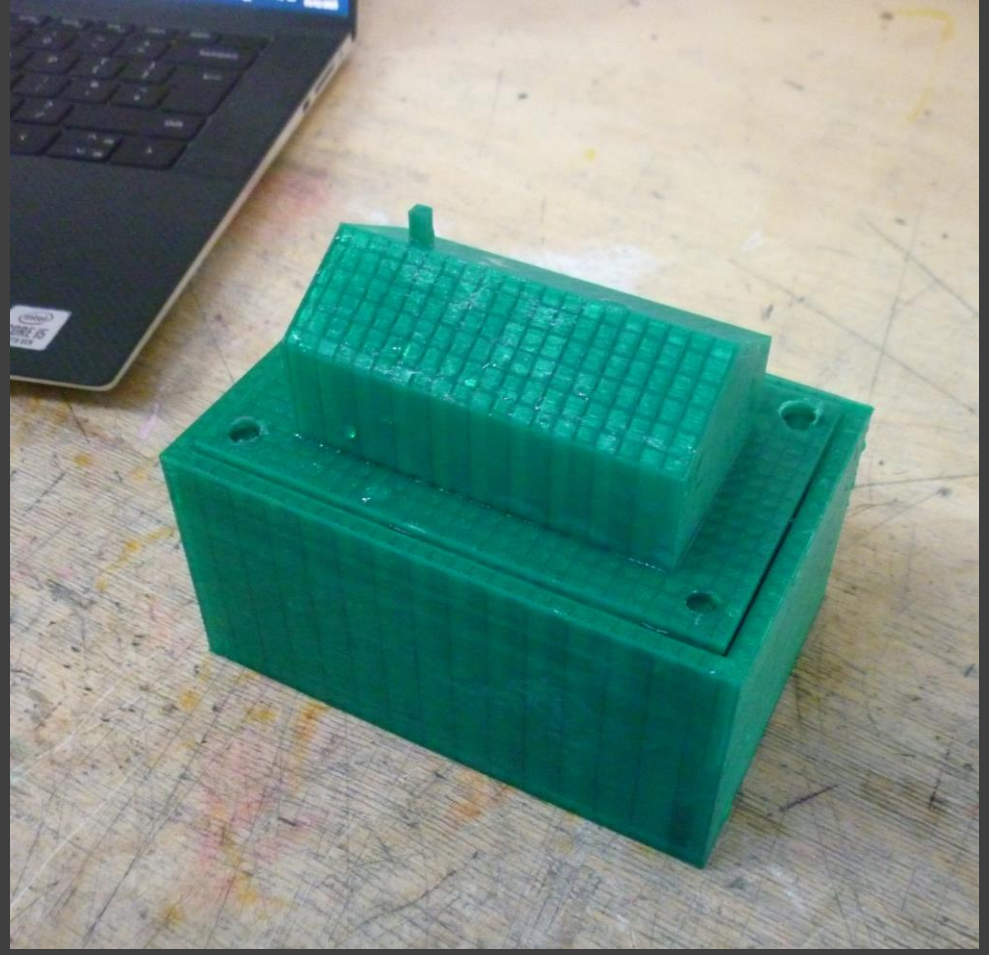
Foundation

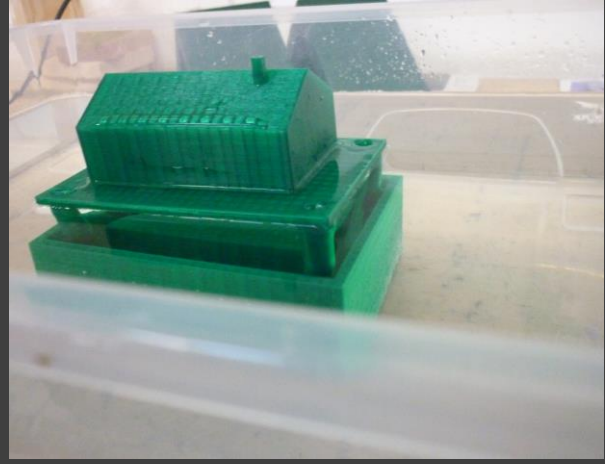
House on stilts

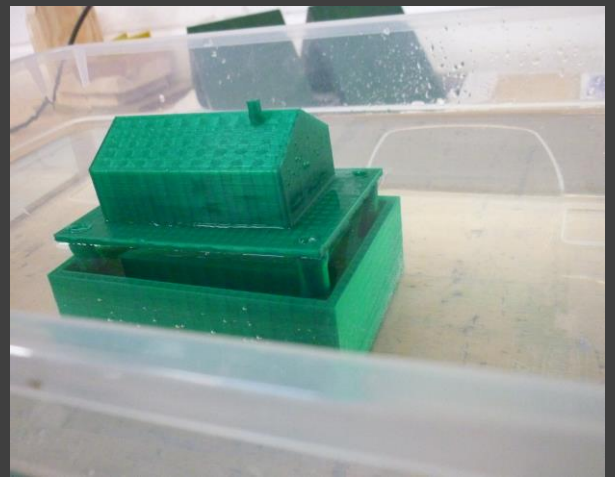


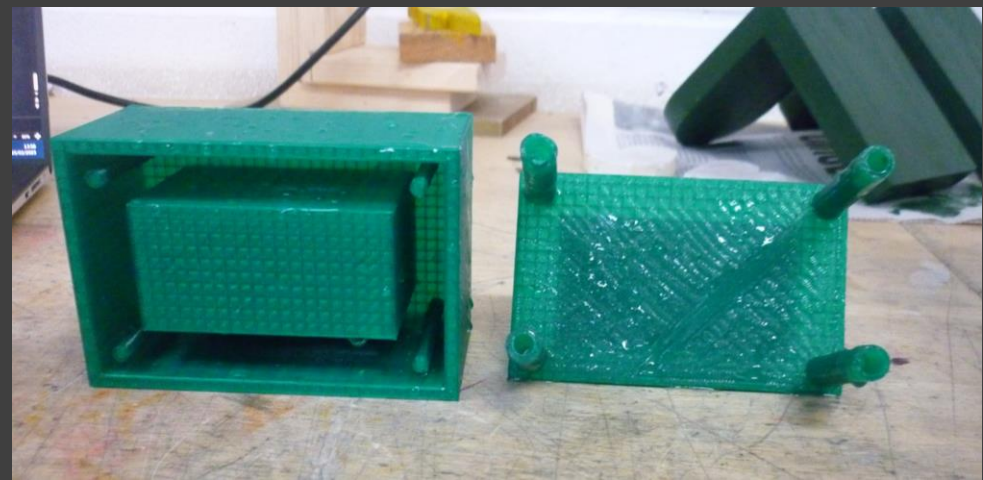


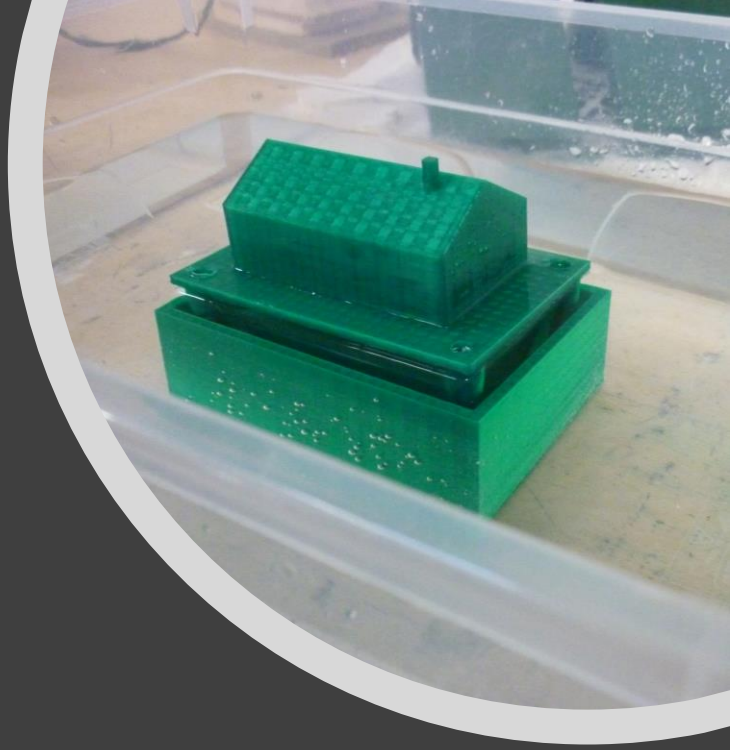
Prototype photos



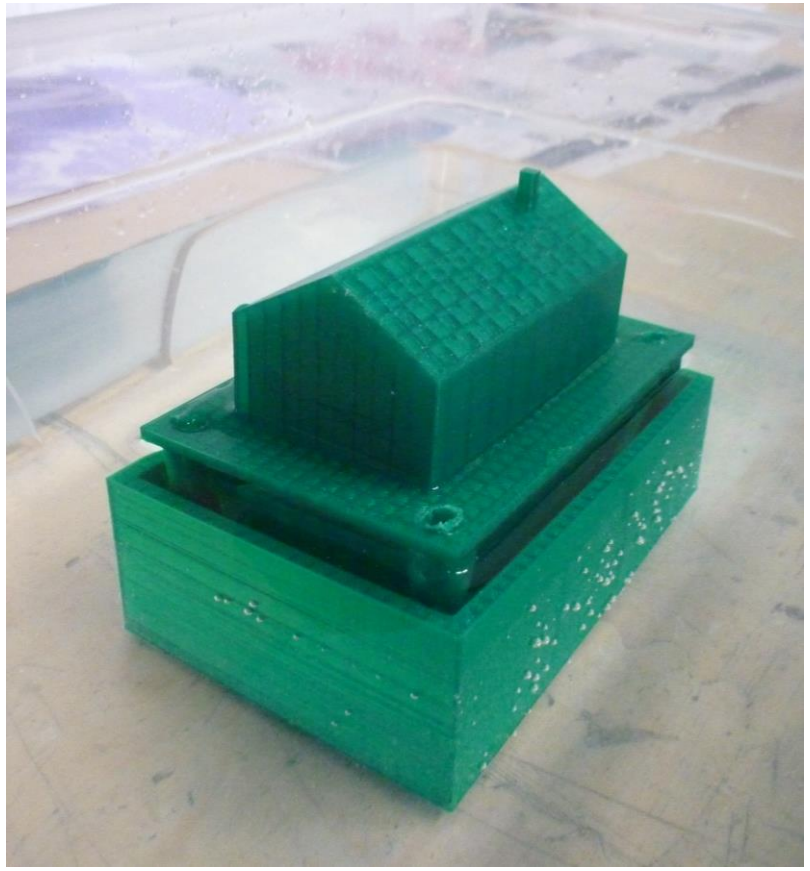


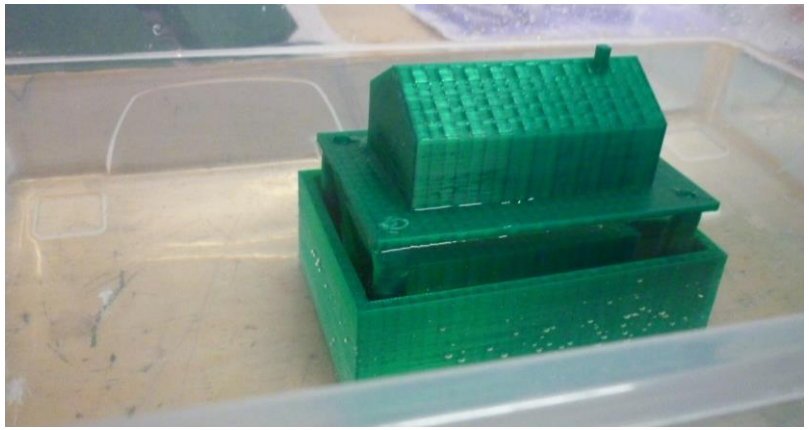


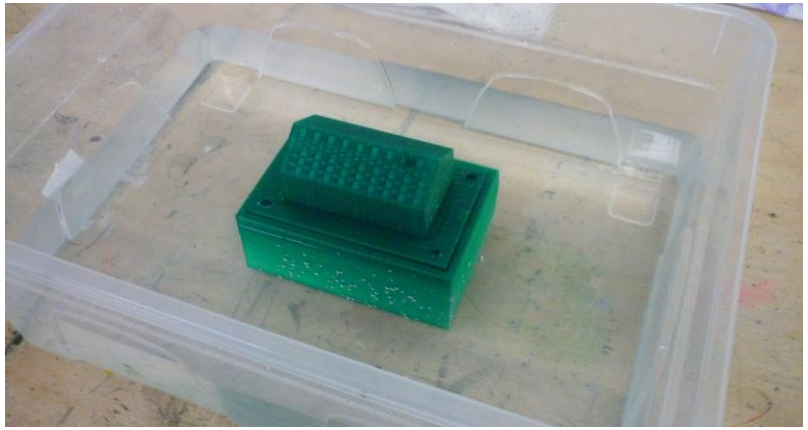


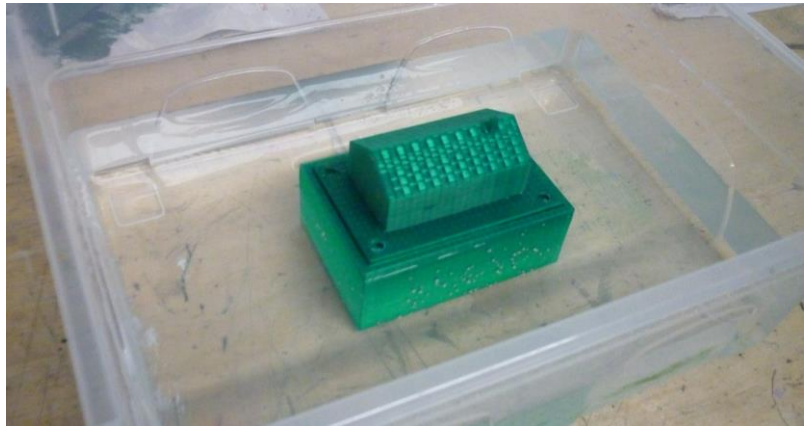


Prototype phots 2









Prototype photos 3

Sewage/Internet/Electricity.

The issues we would have to consider further is sewage and electricity, although we do have some solutions:

- A telescopic sewage pipe running into a septic tank in the base/ running through the base
- An overhead electricity supply

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